Negotiating conservation agreements through serious games: from chimpanzee coexistence to nature positive mining

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Abstract

Mining projects increasingly face a dual challenge: they must manage biodiversity risks while building credible, transparent relationships with local communities. Conservation agreements can help align these objectives, but negotiating them is difficult when technical data, livelihood needs, power imbalances and long-term commitments are discussed in abstract terms. This paper presents a serious-game approach developed from the COHAB experience in Guinea and adapted within the broader COMBO perspective on mitigation, biodiversity offsets and Nature Positive outcomes. The method turns complex conservation negotiations into a structured simulation in which communities, project proponents, government and independent facilitators test conservation measures, livelihood options, funding arrangements and monitoring rules before formal commitments are signed. The game does not replace negotiation; it makes negotiation concrete, transparent and adjustable. For mining companies, it offers a practical tool to strengthen local concertation, reveal trade-offs, improve shared planning and build trust before agreements are finalized.

Keywords: serious games; conservation agreements; mining; biodiversity offsets; Nature Positive; community engagement; COMBO; consultation; concertation.

1. Introduction

Biodiversity conservation in mining landscapes is not only a technical challenge. It is also a negotiation challenge. Companies must avoid, minimize, restore and, where appropriate, offset impacts on biodiversity. Communities must protect access to land, resources, livelihoods and cultural values. Governments must ensure that development, conservation and social commitments are credible and aligned with national policy. In this context, conservation outcomes depend not only on ecological analysis, but also on the quality of dialogue between stakeholders.

Traditional consultation processes often struggle to create this quality of dialogue. Environmental and social data may be too technical for non-specialists. Community concerns may be expressed late, once project design is already advanced. Companies may present mitigation or offset measures as finished proposals rather than negotiable options. Even where good intentions exist, stakeholders may lack a shared space to explore trade-offs safely.

Serious games offer a way to address this gap. A serious game is not entertainment in the usual sense. It is a structured simulation designed for learning, communication and decision support. In the approach presented here, ecological and livelihood data are translated into a game scenario with roles, rules and visible consequences. Stakeholders make choices together, observe trade-offs and debrief what those choices would mean in the real world. The method creates a safe rehearsal space for difficult decisions.

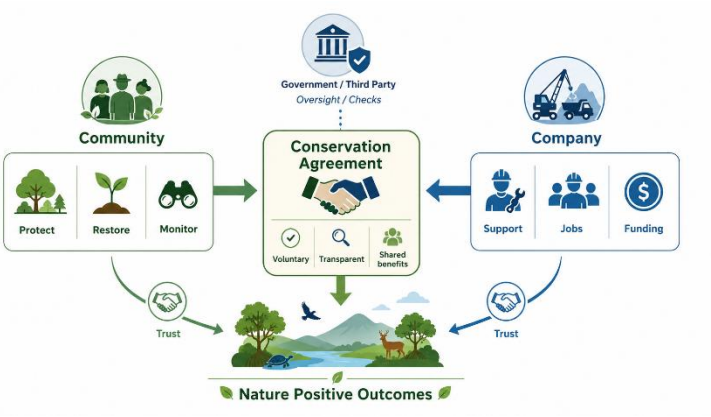
This paper describes how a serious-game approach first developed around human–chimpanzee coexistence in Guinea can be extended to support conservation agreements in mining contexts. It also shows how the tool can contribute to the ambitions of COMBO — COnservation, Mitigation and Biodiversity Offsets — by helping projects move from technical offset design toward practical, negotiated and locally understood Nature Positive pathways.

2. From awareness-raising to conservation agreements with communities

The starting point was an awareness-raising game (the COHAB game), piloted in the Foutah Djallon region of Guinea. The area is characterized by high chimpanzee presence and strong interactions between biodiversity conservation, farming practices and local livelihoods. A serious game was developed specifically for this context to support community dialogue around coexistence.

The COHAB experience showed that a game can do more than explain conservation. It can reveal how different choices affect different actors. It can make pressures visible, such as forest conversion, crop protection, resource use or lack of coordination. It can also show that conservation is not simply a restriction, but a negotiation between protection measures, livelihood support, responsibilities and benefits.

This insight created a broader opportunity. If a game can support coexistence dialogue, it can also support **conservation agreements**. A conservation agreement is understood here as a voluntary, time-limited legal agreement between parties with a common goal that promotes biodiversity conservation and livelihood outcomes. In mining landscapes, such agreements may be linked to biodiversity offsets, community conservation areas, habitat restoration, livelihood support, monitoring obligations or broader Nature Positive commitments.



The key shift is that the agreement becomes playable. Instead of asking stakeholders to comment on a technical document, the game allows them to test commitments before signing them. What happens if a community protects primary forest but receives insufficient livelihood support? What happens if restoration is agreed but labour responsibilities are unclear? What happens if funding stops too early? What happens if monitoring shows non-compliance? These questions are easier to discuss when they are represented through a shared simulation.

3. How the game works

The proposed conservation-agreement game is structured around four roles: the community, the project proponent, government and an NGO or independent third party. Each role has different responsibilities and interests. The community manages land and livelihood choices. The project proponent contributes funding, technical support and project commitments. Government provides oversight and alignment with legal or policy frameworks. The third party can support facilitation, transparency, monitoring or verification.

Six rule changes transform the original coexistence logic into a conservation-agreement negotiation:

- First, one protection measure is mandatory. Stakeholders must decide whether and how to protect primary or secondary forest. This makes conservation an entry condition, not an optional add-on.
- Second, restoration options are negotiated. These may include assisted natural regeneration, ecological restoration or reforestation. The game can represent differences in cost, labour, time and ecological benefit.

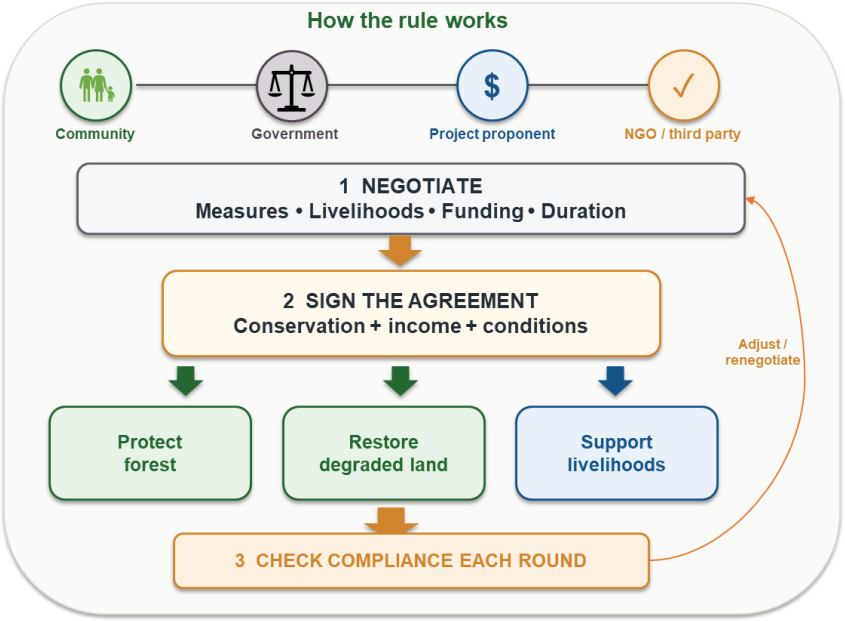
- Third, livelihood activities are introduced as mechanisms to reduce pressure on natural habitats. Options can include agroforestry, beekeeping or livestock improvements, depending on the local context.

- Fourth, funding is part of the negotiation. Stakeholders must discuss not only the amount of support, but also its form: labour payments, equipment, training, duration and conditions.

- Fifth, monitoring is built into the game. At each round, compliance is checked. This creates space to discuss indicators, sanctions, incentives and evidence.

- Sixth, adaptation is possible. If the agreement does not work as expected, stakeholders can adjust or renegotiate. This is essential because conservation agreements operate in changing ecological, economic and social conditions.

The game sequence is simple. Stakeholders negotiate measures, livelihoods, funding and duration. They then sign a simulated agreement combining conservation commitments, income opportunities and conditions. In subsequent rounds, they check compliance and decide whether to continue, adjust or renegotiate. The purpose is not to produce a final legal agreement during the game. The purpose is to make trade-offs visible, transparent and negotiable before formal negotiation begins.



4. What we have learned

The first lesson is that the game makes trade-offs visible. Before the game, stakeholders often make individual decisions based on partial information. Communities may see conservation as a restriction. Companies may see biodiversity commitments as a technical requirement. Authorities may see agreements mainly through compliance. During the game, these perspectives become connected. Each decision has consequences for habitat, livelihoods, cost, trust and feasibility.

The second lesson is that negotiation needs iteration. A single meeting rarely produces a strong conservation agreement. Stakeholders need time to test options, see consequences, ask questions and revise positions. The game creates a structured way to repeat this cycle. It helps participants move from fixed positions toward shared problem-solving.

The third lesson is that facilitation matters. Serious games can reduce abstraction, but they do not automatically remove power imbalances. Neutral facilitation is needed to ensure that community voices are heard, technical information is understandable and the discussion remains open. The game is therefore both a tool and a process. Its value depends on preparation, facilitation and debriefing.

The fourth lesson is that the debrief is as important as the play. The game generates experience, but the debrief turns experience into planning. After play, participants can identify shared rules, better spatial planning options, livelihood conditions, monitoring indicators and adaptive-management clauses. This is where the game connects to real agreements.

5. Why this matters for mining companies

For mining companies, the tool offers a practical way to improve local concertation. Many companies already invest in stakeholder engagement, biodiversity studies, offset planning and community development. However, these workstreams are often separated. Biodiversity experts prepare technical options. Social teams consult communities. Legal teams prepare agreements. Communities are asked to react to proposals that may already feel fixed.

The serious-game approach brings these workstreams together earlier. It allows companies and communities to explore the same landscape, the same pressures and the same choices in a shared format. It can be used before an offset is finalized, before a community agreement is signed, or before a restoration programme is launched. It can also be used to explain why certain measures are necessary and to test whether proposed benefits are realistic.

For companies seeking credible Nature Positive outcomes, this matters. Nature Positive cannot be achieved only through metrics and maps. It requires local acceptance, long-term stewardship and adaptive implementation. A conservation measure that is technically strong but socially unsupported may fail. A livelihood activity that is popular but disconnected from ecological pressure may not deliver biodiversity outcomes. The game helps identify these risks early.

The tool can also reduce mistrust. In many mining contexts, communities fear that agreements will limit access to land without delivering promised benefits. Companies fear that negotiated commitments will be misunderstood or not respected. Governments and third parties need evidence that agreements are fair and monitorable. By simulating commitments before signature, stakeholders can discuss expectations openly. This does not eliminate conflict, but it creates a more transparent basis for negotiation.

6. Implementation gaps

Three implementation gaps must be addressed to move from pilot to planning instrument.

- The first gap is data. Biodiversity and livelihood data are often too technical for community dialogue. The priority is to translate data into scenarios: maps, tokens, roles, rules and consequences that non-specialists can understand without losing the logic of the real system.

- The second gap is trust. Power imbalance can distort participation. The priority is to facilitate neutral sessions, ideally with trusted local facilitators and clear ground rules.

- The third gap is scale. Site-by-site pilots are useful, but mining companies and public authorities need repeatable methods. The priority is to embed the approach in broader frameworks: biodiversity offset planning, environmental and social impact assessment follow-up, community development agreements, local land-use planning and national mitigation-hierarchy guidance.

7. Next steps

The next step is to improve the game by refining rules, materials and facilitation guidance. The tool must remain simple enough to play, but robust enough to represent real conservation choices. It should then be tested with mining companies and local communities on real or realistic projects. These tests should document what changes after the game: better understanding, revised agreement clauses, clearer monitoring indicators, stronger trust or improved planning.

A second step is to build guidance for practitioners. This should include how to prepare scenarios, choose roles, manage sensitive discussions, debrief results and translate game outcomes into agreement design.

A third step is to scale carefully. Local facilitators should be trained so that the approach is not dependent on external experts. The game should be adaptable to local languages, governance systems, ecological priorities and community expectations.

8. Conclusion

Serious games can help transform conservation agreements from technical documents into shared learning processes. The experience from COHAB shows that a well-designed game can move stakeholders from coexistence issues to structured dialogue. The extension proposed here applies the same logic to mining, biodiversity offsets and Nature Positive commitments within the COMBO perspective.

The message for mining companies is straightforward: before asking communities to sign conservation commitments, invite them to play the agreement. Let stakeholders test what protection, restoration, livelihood support, funding, monitoring and adaptation mean in practice. By turning complex negotiations into shared experiences, companies, communities and governments can move from mistrust to co-design — and from consultation to real concertation for Nature Positive outcomes.

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